

EPA-PNL-5312

Phil North/R10/USEPA/US

05/12/2010 01:32 PM

To trew

cc

bcc

Subject Pebble PPT

Hi Trevor,

It was good talking with you last night. This is a really great topic, glad you chose it. I am sending the presentation in two parts. You can use the ideas presented but I would appreciate if you would not use the actual slides. All the information can be found on line, so it is better for me if you find the original information and cite those sources. This is not intended for external use, though I am happy to help with your project. For the slides to work properly, you should view the presentation as a "slide show".

Most of the fish data is from ADFG Bristol Bay commercial fish reports, which are readily available on line. The Renewable Resources Coalition posts many papers, including Duffield, the citation of which is below. The Pebble Limited Partnership web site lists mine statistics. A paper by Crawford (cited below) gives smolt information that can be used to estimate outmigrant class size.

Duffield, J.W. et al. 2007. Economics of Wild Salmon Ecosystems: Bristol Bay, Alaska. USDA Forest Service Proceedings RMRS-P-49.

Crawford, d.L. 2001. Bristol Bay sockeye salmon smolt studies for 2001. ADFG Regional Information REport No. 2A01-27. Anchorage, AK.

This should be a good start. Have fun.

Phil



RA Presentation 5-2010-2.ppt

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"To protect your rivers, protect your mountains."

Part 2: Bristol Bay and the Pebble Copper Mine



What you will see.

- A Primer on Bristol Bay
- The Mine
- Concerns
- Conclusions
- Recommendations

Key Messages

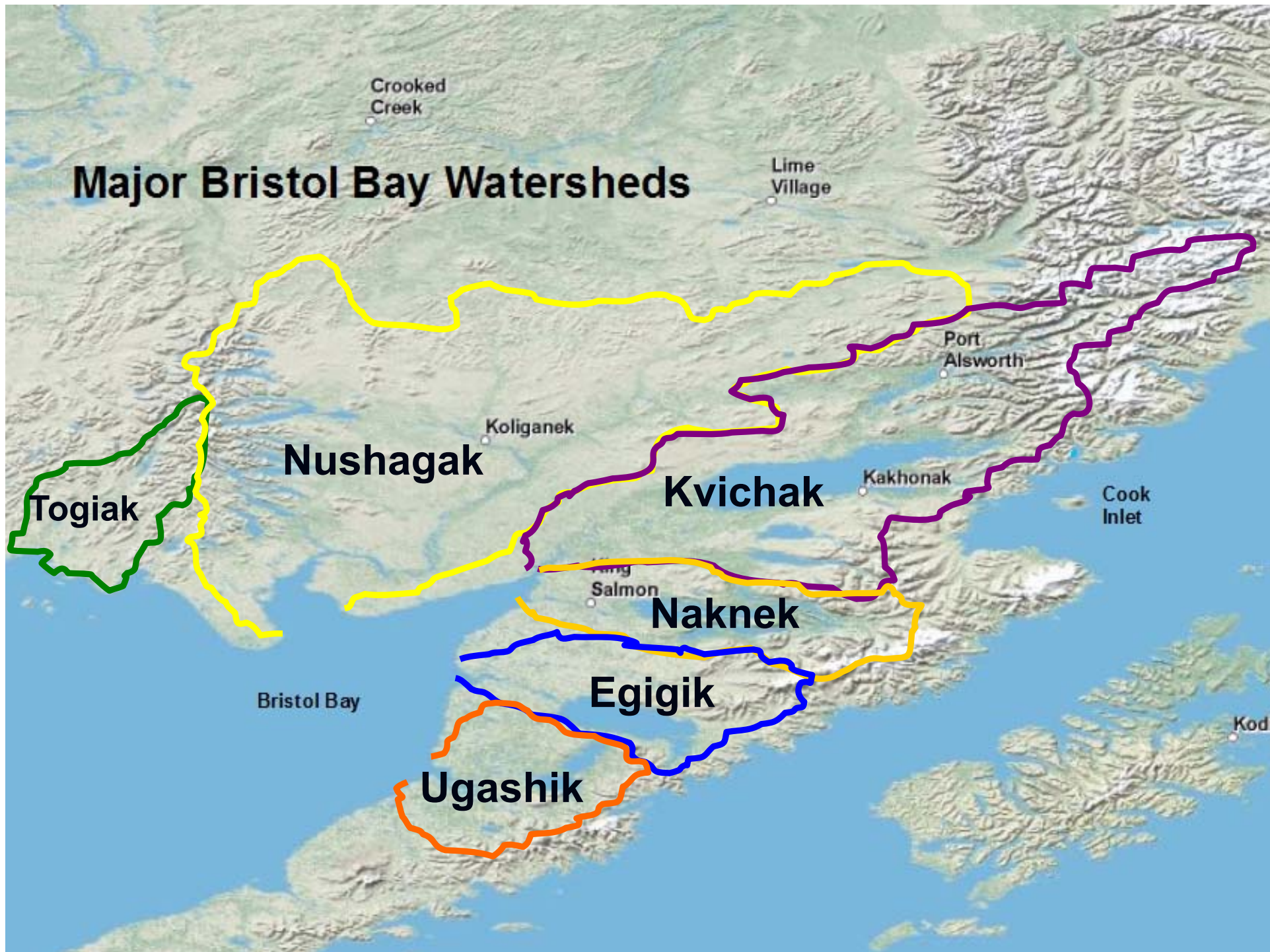
- Bristol Bay is a remote, sensitive ecosystem with a salmon fishery of global significance
- Bristol Bay has a unique, high-value Yupik (Native Alaskan) subsistence uses
- Pebble would be one of the world's largest mines
- The effects of the mine would extend far beyond the mine site.
- EPA has Key Regulatory Roles:
 - 404 Oversight
 - NEPA Review and rating
 - 404(c)

A satellite map of Alaska, showing the state's coastline and interior. The land is depicted in shades of green and brown, indicating vegetation and terrain, with white patches representing snow or ice. The surrounding waters are a deep blue. The map is framed by a dark blue border.

Alaska

Bristol
Bay

©2009 Google



Major Bristol Bay Watersheds

**Proposed Pebble
Mine Site**

Nushagak

Kvichak

Bristol Bay

Nushagak R.

Mulchatna

Koliganek

Koktuli R.

Chulitna

Upper Talarik Crk

Kakhonak

King
Salmon

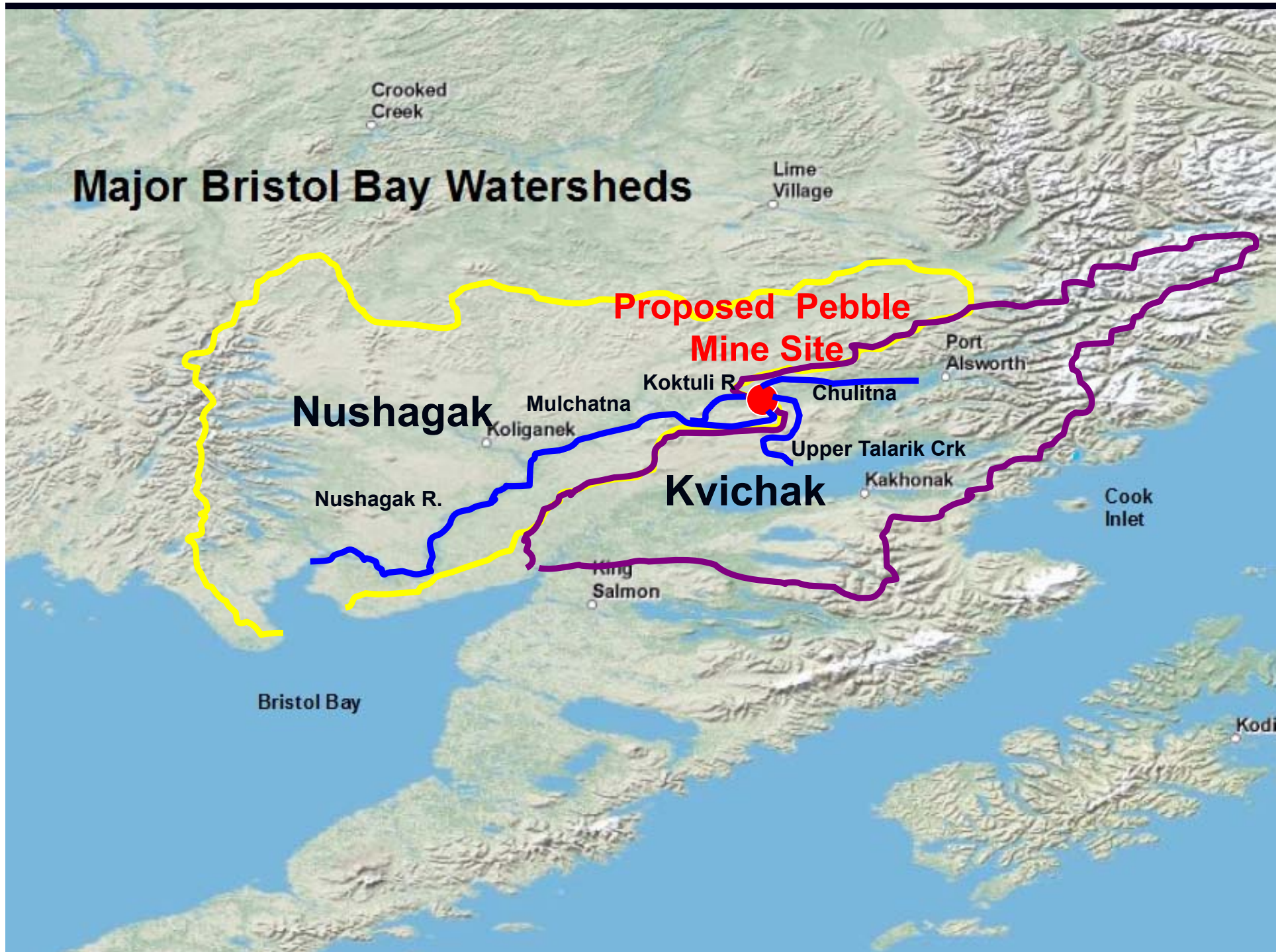
Port
Alsworth

Cook
Inlet

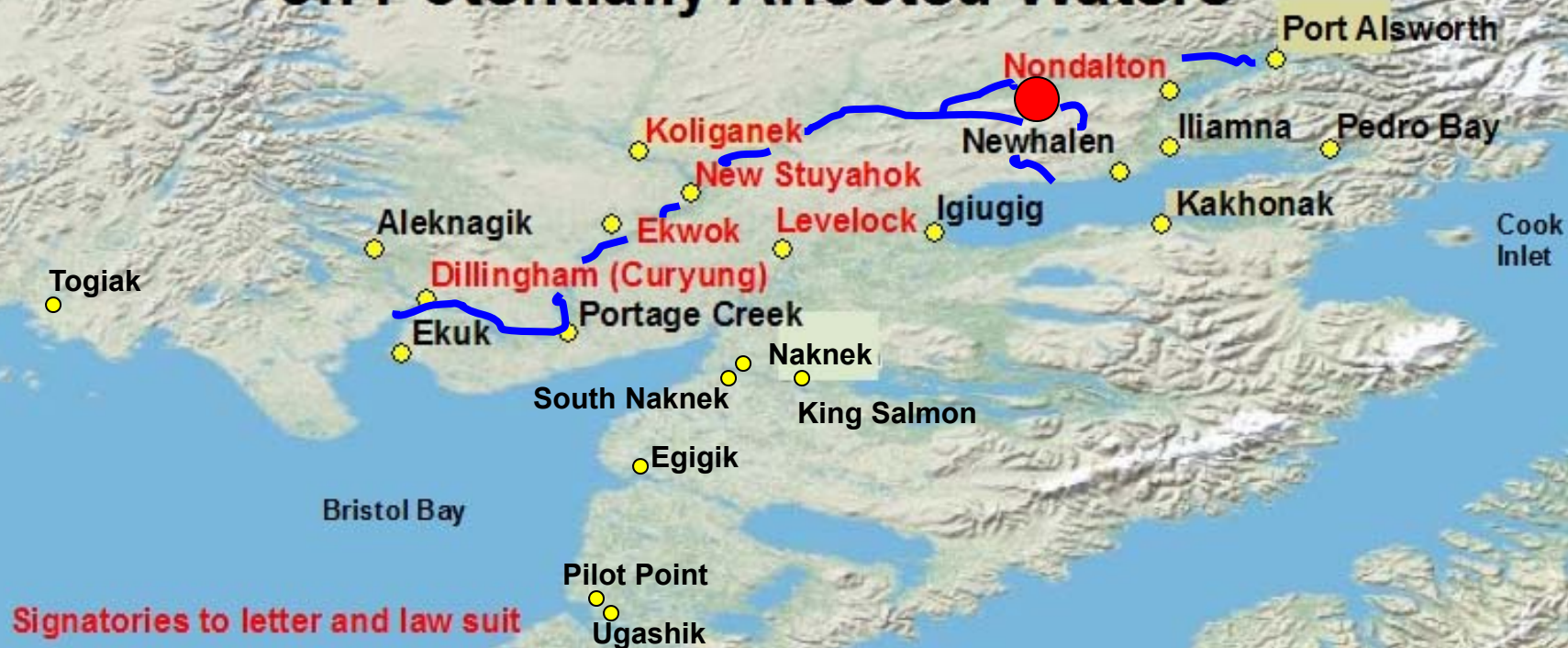
Kodi

Crooked
Creek

Lime
Village

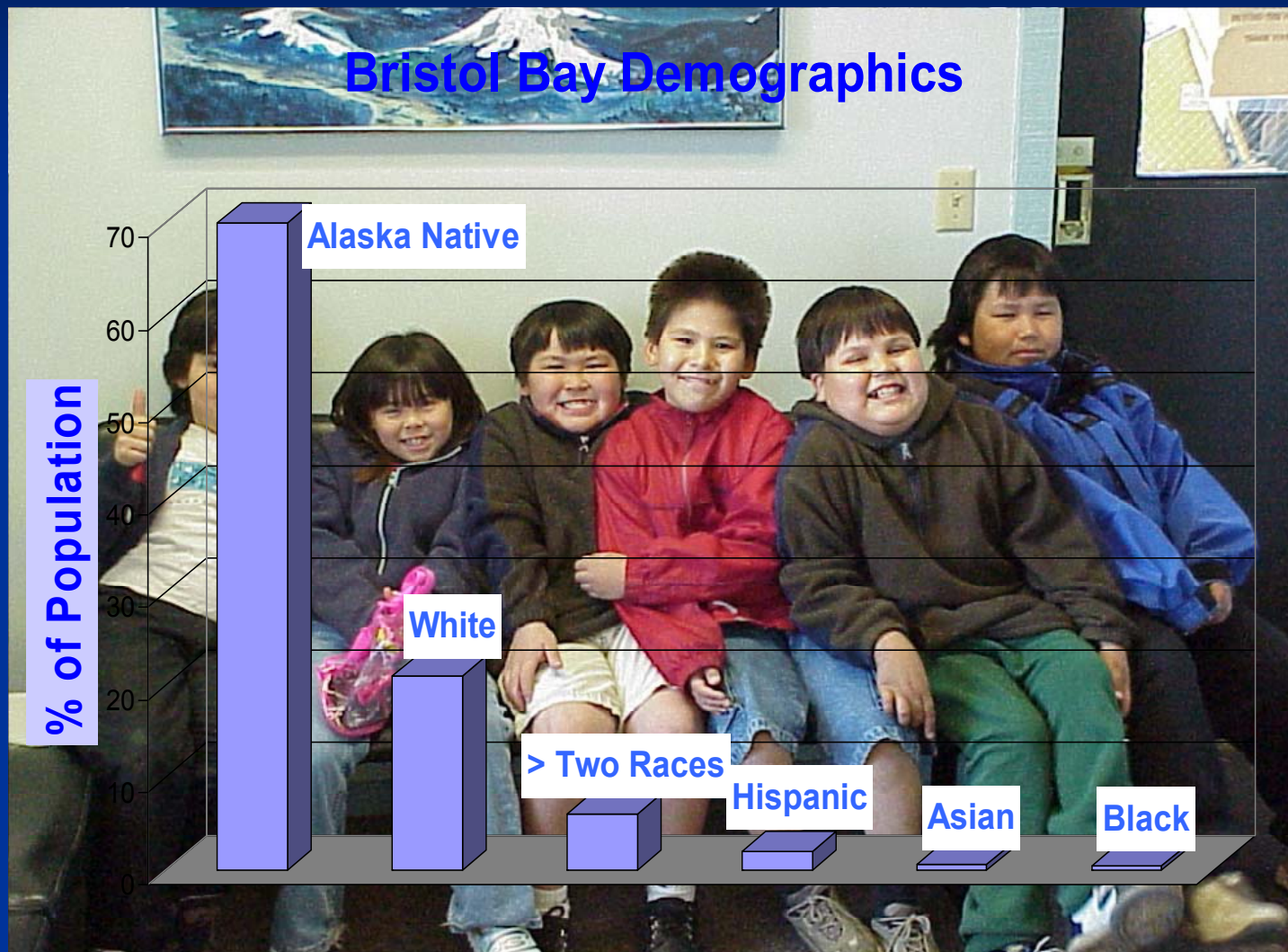


Fifteen Alaska Native Villages on Potentially Affected Waters



Bristol Bay Demographics

70% Alaska Native



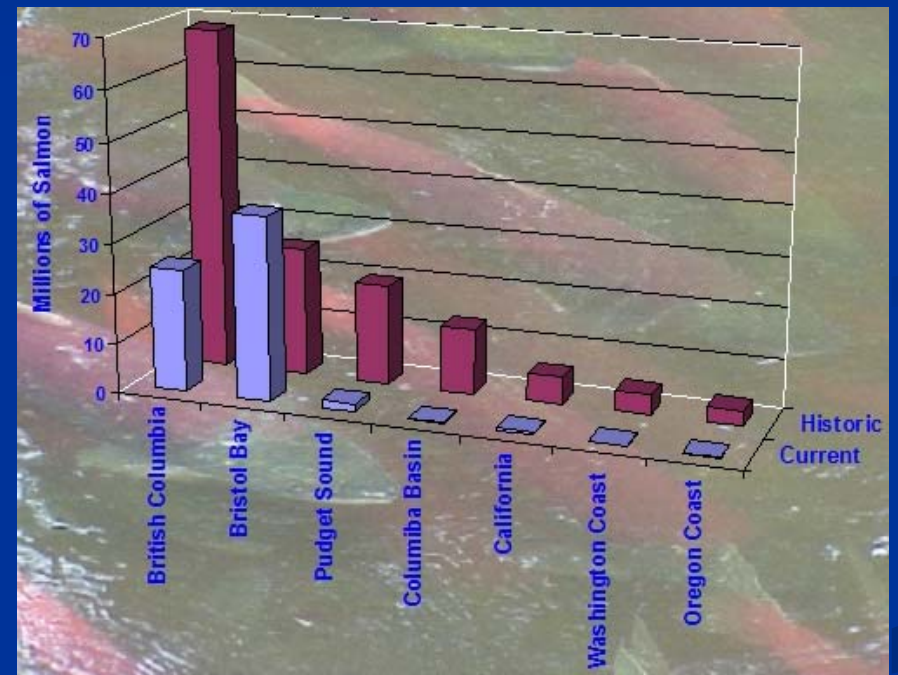
A photograph of a river filled with many salmon swimming. The water is murky green, and the salmon are a vibrant reddish-pink color. The fish are scattered throughout the frame, some near the surface and others deeper. The text "It's all about salmon" is overlaid in the center in a large, bold, dark blue font.

**It's all about
salmon**

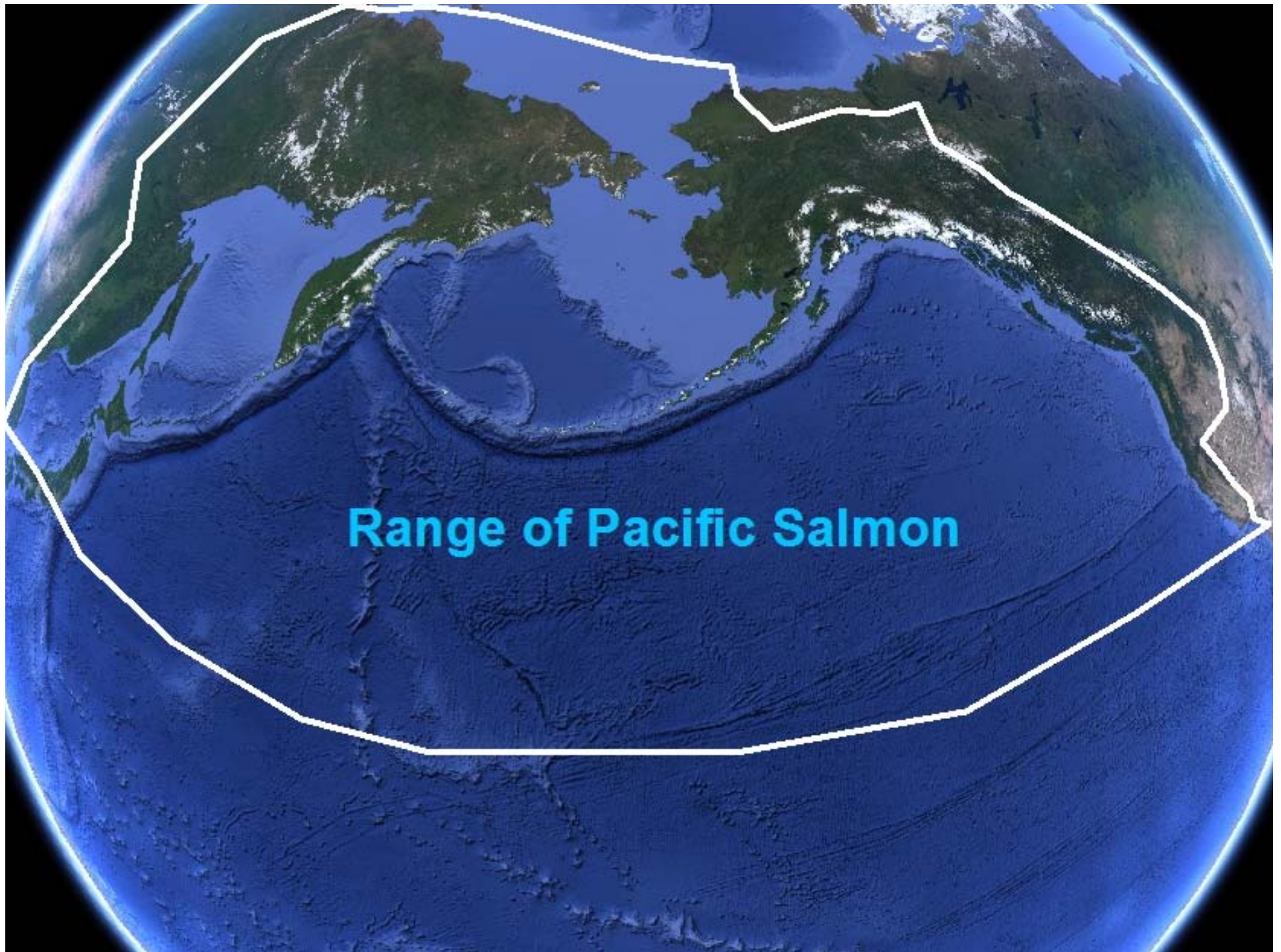
and people.

Salmon Fishery

- Nushagak and Kvichak rivers produce 4% of the world's Pacific Salmon & up to 800 million salmon smolts, an important part of the forage base in the North Pacific Ocean
- Value of salmon from Bristol Bay rivers to the local economy ranges \$104 – \$179 million annually
- In all of North America, Bristol Bay is the only major watershed that maintains historic levels of wild salmon



Historic and Current West Coast North American Salmon Run Size



Range of Pacific Salmon

A satellite map of the Pacific Ocean and surrounding landmasses. Overlaid on the map are white text labels indicating the percentage of Pacific Salmon production from various regions. Russia is labeled with 31%, Alaska with 43%, Japan with 21% (mostly hatchery), British Columbia with 4%, and the US West Coast (WA, OR, CA, ID) with 1%. A circular diagram in the North Pacific shows a total of 8% with a sub-region of 4%.

Russia 31%

Alaska 43%

**British Columbia
4%**

**WA, OR, CA, ID
1%**

Japan 21%
(mostly hatchery)

Pacific Salmon

2008 Alaska Salmon runs = 221,000,000

2008 Bristol Bay runs = 41,000,000

2008 Nushagak and Kvichak runs = 19,000,000

Smolts from Nushagak and Kvichak \approx 800,000,000

**~4% of the world's Pacific Salmon come from
these two watersheds.**

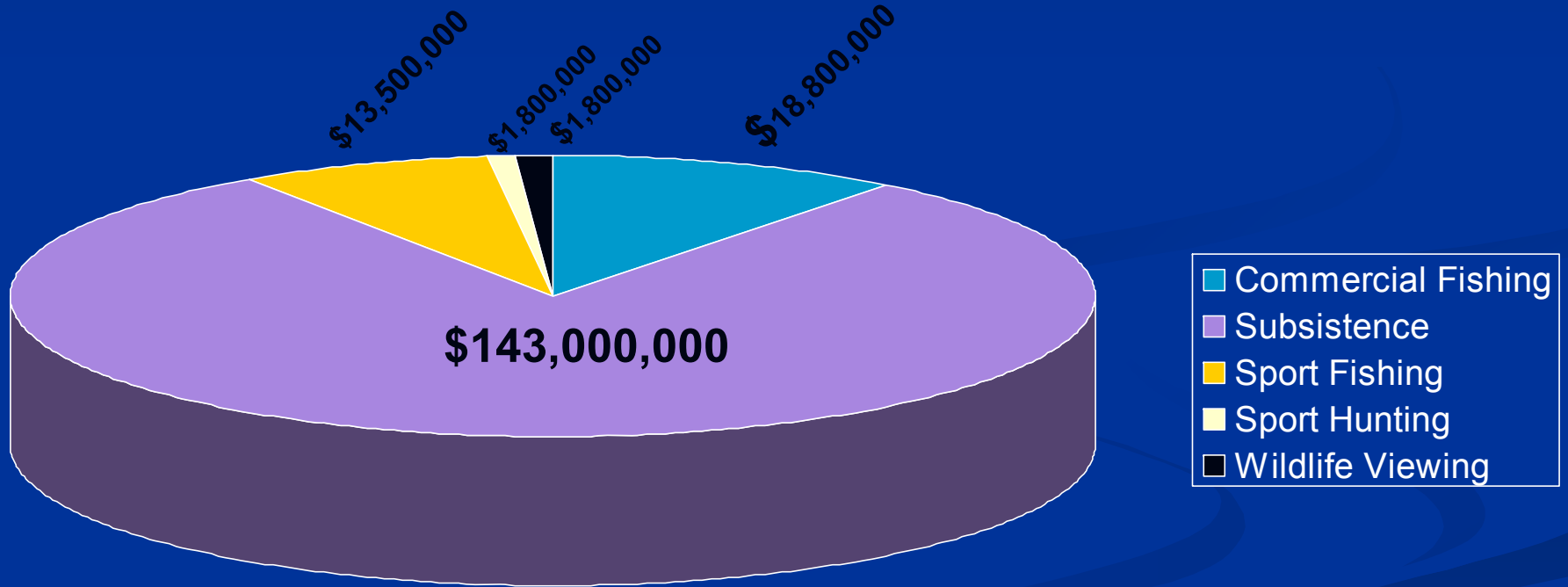
Salmon is critical to the subsistence economy of Bristol Bay

Yupik People



- Annual subsistence consumption:
 - 286 lbs of salmon per person
- Subsistence fishing: \$78 to \$143 million annually
- Total dollar value of wild salmon ecosystem: \$104 to \$179 million annually
- Subsistence is the fulcrum of native culture making this an environmental justice issue

Relative Monetary Contributions of Salmon Ecosystem to Bristol Bay Economy



Other significant subsistence species

■ Freshwater fish

(23 to 54 lbs/year/person)

- Arctic Grayling
- Blackfish
- Burbot
- Longnose Sucker
- Northern Pike
- Rainbow Smelt
- Lake Trout
- Brook Trout
- Whitefish (4 species)
- Cisco

■ Mammals

- Caribou
- Moose
- Beaver



Commercial Fishing



20 year average ex-vessel
value of salmon is
\$119,000,000

Salmon provide forage in the North Pacific and Bering Sea



Up to 800,000,000 salmon smolt migrate from the Kvichak and Nushagak Rivers every year. These fish are forage for other animals in the North Pacific Ocean. Supported animals include:

- Steller's Sea Lion
- Northern Fur Seal
- Beluga Whale
- Pelagic fish (e.g. tuna, shark)
- Sea birds
- Pelagic whales
- West coast salmon



Salmon are the nutritional base of the rich Bristol Bay Watersheds



Wetlands

- 30 to 50% of the mine foot print is wetland
- Wetlands are critical to maintenance of aquatic systems
 - Wetland functions
 - Salmon habitat
 - Base flow maintenance
 - Nutrient input and cycling
 - Wildlife Habitat
 - Flood control
 - Sediment control



Endangered Species

- Steller's Sea Lion*
- Steller's Eider
- Beluga Whale*
- Sea Otter
- Humpback Whale



*Some of population dependent on Bristol Bay salmon

Species of Conservation Concern

- Whimbrel
- Black Oystercatcher
- American Golden Plover
- Short-billed Dowitcher
- Surfbird
- Hudsonian Godwit
- Blackpoll Warbler
- Gray-cheeked Thrush
- Olive-sided Flycatcher
- Rusty Blackbird
- Arctic Warbler
- Northern Fur Seal
- Cook Inlet Harbor Seal
- Lake Iliamna Harbor Seal*



* One of two populations of freshwater seals in the world